

1.5	PACKING EXPANDER OR CONSTRICTOR	104	..With supplementary spacing means intermediate ends of surface
80	SPRING PANEL		
81	..Composite springs of diverse material, e.g., metal and non-metal	105	..Stiffener or bracer for loading surface
82	..Vented fluid chamber modifies action of metallic spring	106	..Multiple sections span frame
83	..Superposed layers; metal and non-metal	107	..By inwardly bowed portion, i.e., "fishmouth" type
84	...Metal layer is compressible coil spring	108	...With coiled apex, i.e., "safety pin" type
85	..Multistage springs	109	..By outwardly bowed portion
86	..Diverse types of superposed metallic springs	110	..Panel secured peripherally to supporting frame
87	..Sinuous spring loading surface supported by other spring	111	..Panel secured to tension frame inwardly
88	..Compressible coil spring loading surface supported by other spring	112	...Secured by resilient connectors
89	..With means to vary preliminary tension of spring	2	VEHICLE
90	..With means to dampen vibration of springs, e.g., sound deadening	3	..Railway
91	..Spring panel comprises vertically oriented compressible coil springs	4	..Coil
92	..Plural superposed coils	5	..Perambulator
93	..Panel comprises spring of varying capacities	6	..Bolster
94	..With padding protector on spring end	7	..Leaf
95	..Loading surface includes component other than coil spring	183	..Parallel depression (e.g., having stabilizer bar)
96	..With resilient side or end, e.g., edge roll	184	..Duplex
97	..With reinforcement or extension for border wire	185	...Single pivot
98	..With diagonal surface-to-frame brace	186	..Fluid stabilizer
99	..Resiliently mounted on frame by tensile springs	187	...Including torque bar or pump
100	..Mounted on frame spanning strips	188	..Torque bar or tube stabilizer
101	..Spring rows supported by row separating stringers	189	...And elastomeric member
102	..With cantilevered surface extension, i.e., "soft edge"	190	...And coil spring
103	..Spring means spacing loading surface vertically from plane of supporting frame	191	...And retarder
		192	..Leaf spring stabilizer
		193	...Leaf spring acting between pivoted links
		194	..Plural nontorsion coil springs
		195	..Mechanical spring and nonresilient retarder (e.g., shock absorber)
		196	..Friction (e.g., "snubber")
		197	...Including flexible strap connector
		198	....Strap forms friction element
		199	....Flat spiral spring
		200	...Having lubricating feature
		201	...Elastomeric spring or friction element
		202	....And helical coil spring
		203	.....Plural coil springs
		204	...Friction surface on helical spring

205	...Including cam or wedge friction element or actuator therefor	238	.....Nested coils
206	....Helical cam surface	239	....Having leaf-end-connecting lever
207	....Plural axially spaced expandable friction rings	240	.....Coil spring between lever and vehicle part
208	....Including relatively rotating friction surfaces (e.g., drum type)	241	...And fluid pressure spring
209	....Including helical coil spring	242	...Including adjustment for spring loading
210	.....Transversely oriented coil for biasing friction surfaces	243	...And roller or bearing to accommodate deflection of spring
211	.....Plural laterally spaced coils (e.g., spring group)	244	...Vertically spaced leaf springs (e.g., elliptic)
212	.....Nested coil springs	245	...Having serially pivoted levers at end of spring
213	.....Inside friction shell	246	...Transverse leaf spring
214	...Friction surface formed on or biased by additional spring	247	...Center acting or resiliently biased lever
215	....Relatively rotating friction surfaces (e.g., drum type)	248	..Coil spring
216	...Coil spring for biasing vehicle parts and friction surfaces	249	...Enclosed spring
217	..Fluid retarder	250	....Plural coaxial coils in enclosure
218	...With separate pump or adjustment for spring loading	251	...Plural nontorsion coil springs
219	...Elastomeric spring	252	....Coaxial
220	....Mounted at end of retarder	253	....Differentially deflected by lever
221	...Helical coil spring	254	...Quadrilateral suspension
222	....Quadrilateral suspension	255	...Including adjustment for spring loading
223	....And rocking actuator arm or rotary fluid displacement member	256	..Fluid spring
224	.....Plural mechanical springs for biasing vehicle parts	257	..Elastomeric spring
225	....Plural mechanical springs for biasing vehicle parts	258	...Annular or spherical
226	....Spring within coaxial fluid chamber	259	.Compound
227	...Leaf spring	23	..Leaf, coil, and fluid pressure
228	..Lever and nontorsion spring	24	..Leaf, fluid pressure and liquid
229	..Leaf spring	25	..Leaf and torsion
230	...Quadrilateral suspension	26	...Torsion coil
231	...And coil spring	27	....Leaf-end-connecting
232	....And roller	28	..Leaf and coil
233	....And "overload" bumper	29	...Leaf-end-connecting
234	....Including adjustment for spring loading	30	..Leaf and rubber type
235	.....Adjusting screw coaxial with coil spring	31	..Leaf and fluid pressure
236	....Plural coils between vertically spaced leaf springs	32	...Leaf-end-connecting
237	....Plural coaxial coils	33	..Coil and rubber type
		34	..Coil and fluid pressure
		35	..Rubber type and fluid pressure
		36.1	.Leaf
		37.1	..And covering
		37.2	...Spiral or elastic covering
		37.3	...Three serially arranged metallic segments
		37.4	...Having lubricant reservoir or pad

38	..Twin, axle interposed	285	..Plural torsion spring
39	..Side bar	286	.Coil
40	..Longitudinal	287	..Having stiffener
41	..Cantilever	288	..Conical
42	..Elliptic	289	..Plural coils
43	..Elliptic and leaf	290	...Nested
44	..Semielliptic	291	...Having guide rods extending through coils
45	..Semielliptic and leaf	292	.Elastomeric
46	...End-to-end connected	293	..Including central guide rod or tube through spring
47	..Structure	294	..Having rigid spacer plate between plural elastomeric segments
48	...Auxiliary tensioning elements	64.11	.Comprising compressible fluid
49	...Antifriction	64.12	..Having lockable strut
50	...Lubrication	64.13	..Including compressible liquid
51	..Broken-spring supports	64.14	..Including chamber at sub-atmospheric pressure
52	..Intermediate supports	64.15	..With retarder
53	..Clips	64.16	...Leveling device
260	..Having specific end connection	64.17	....Self-pumping
261	...For elliptic spring	64.18	....Having metering pin for varying spring rate
262	...Sliding	64.19	....Having flexible wall
263	...Including spring for biasing pivotal connection	64.21	.....Including rolling lobe between telescoping members
264	...Including threaded or grooved bearing surface	64.22	...Having metering pin for varying spring rate
265	...Including spring position adjustment or geared connection	64.23	...Having flexible wall
266	...Universal joint	64.24	....Including rolling lobe between telescoping members
267	...Having rolling antifriction elements (e.g., ball bearing)	64.25	...Having plural compressible fluid springs
268	...Having lubrication feature	64.26	...Having telescoping cylinders
269	...Including elastomeric material	64.27	..Having flexible wall
270	....Including tapered bushing or inner and outer sleeve for cylindrical bushing	64.28	..Including means for charging or discharging spring
271	...Including shackle pivoted to spring and to vehicle	66	.Braces
272	.Flat spiral	67	..Yielding
273	.Torsion	68	..Sliding
274	..Quadrilateral suspension	69	ELASTIC EXTENSION DEVICES
275	..Helical torsion coil	70	.Compression spring
276	..And separate elastomeric member (e.g., bushing)	71	..Single
277	..And adjustment for varying spring loading	72	...Drawbars inclosed
278	...Screw threaded adjustment	73	.Tension spring
279	..Elastomeric torsion spring	74	..Single
280	...Plural axially spaced elastomeric elements	75	RECIPROCATING-BED-CUSHIONING DEVICES
281	...And attached inner and outer metallic sleeves	113	FLUID
282	....Plural concentric elastomeric rings	114	.Time delay
283	..Multilayer leaf	115	.Draft gear
284	..And housing enclosing spring	116	.Bumper
		117	.Cushion for person

118	.Expansible-contractible chamber device	141.4	....Annular flange or collar embedded in resilient element
119	..Press cushion	141.5	.....Flanged or collared innermost member
120	..Vehicle; for non-support or accessory support cushioning	141.6	....Collapsible wall
121	..Compound	141.7	....Arcuate or tapered contact surface
122	..Diaphragm or bellows	142	CUSHION FOR HUMAN COMFORT
123	...For valve or throttle control	143	.Compound
124	..Piston	144	.Zigzag
125	...For use in well drilling or operating	145	.Rubber
126	...System	146	.Fibrous pad
127	....Trans-piston passage	147	COMPRESSED WIRE MESH
128	...Rigid-material-spring impelled	148	FIBROUS
129	...Seal	149	.Glass fiber
130	PRESS CUSHION	150	CENTERING DEVICE
131	SEAT SUPPORT	151	COMPOUND
132	.Velocipede or motorcycle	152	.Rubber
133	.Flexural	153	RUBBER
134	FRICTION SNUBBER	154	TORSION
135	.Snubbed coil spring or ring pack	155	.Coil
136	RESILIENT SHOCK OR VIBRATION ABSORBER	156	..Volute
137	.Tool movement dampening	157	..Also compressible or expansible
138	.Draft gear	158	BENDABLE ALONG FLAT SURFACE (E.G., LEAF SPRING)
139	.Bumper	159	.Snap spring
140	..Rubber	160	.Flexural support
140.11	..Including energy absorbing means or feature (e.g., supplemental vehicle equipment, such as motor mount, seat, etc., including additional fluid or friction energy absorber)	161	.Ring or annular spider
140.12	..Having concentric coaxial spring between plural confining means for radial force	162	..Pair or pack
140.13	..Axial	163	.Including tang or spider
140.14	...With electronic or magnetic control	164	.Bow spring or superposed spring elements
140.15	..With electronic or magnetic control	165	..Zigzag or plural
140.2	.Variably preloaded	166	COIL
140.3	.Having diverse resilient element	166.1	.Conical
140.4	..Metallic and nonmetallic	167	.Circular
140.5	.Diverse resistance to vibration along different axes	168	.Plural, one within another
141	.Nonmetallic, resilient element	169	.Including internal brace
141.1	..Plural resilient elements with rigid spacer	170	.Including end thrust member
141.2	..Confined between coaxial, vibrating annular members	171	..Equilibrium or over-center
141.3	...Including radial contact surface, e.g., tapered or shouldered member	172	..Including cam
		173	..Including lever
		174	..For dynamic or work environment
		175	...Adjustable
		176	...Reset
		177	..Adjustable
		178	..Support type
		179	..Particular end connection
		180	.Irregular
		181	FORAMINATED
		182	MISCELLANEOUS

FOREIGN ART COLLECTIONS

FOR CLASS-RELATED FOREIGN DOCUMENTS

DIGESTS

DIG 1 CONSTANT HEIGHT
DIG 2 CONSTANT HEIGHT, SELF-PUMPING
DIG 3 SPRING BUCKLE

